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**More Than Just A Nuisance**  
*When Aerial Terror Bombing Works*

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School of Advanced Airpower Studies

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## ***Abstract***

Strategic bombing against civilian targets was attempted on a grand scale during the Second World War against Britain, Germany, and Japan. Although the physical destruction was great, the coercive effect on the leadership of these states was questionable. However, in 1991, air attacks of negligible military or destructive value against cities in Israel imperiled the very existence of the allied coalition arrayed against Saddam Hussein. If large, continuous, destructive air attacks against civilian targets did not work in the past, why should small, brief, minimally destructive attacks coerce leaders now?

This thesis examines three campaigns during which aerial terror raids, peripheral to the main war efforts and incapable of destroying the enemy war-making capacity, elicited disproportionate reactions from the targeted leaderships. The raids on London during World War I, the V-1 and V-2 raids on London three decades later, and the Scud attacks on Israel during Desert Storm each show evidence of overreaction by Allied/coalition leaders.

A review of the nature of terrorism and of airpower reveals that aerial weapons are uniquely suitable as terror weapons. An analysis of the differences between nuisance attacks and conventional civilian bombing, along with an understanding of the pressures on the leaders involved, leads to an explanation for past overreactions: aerial terror raids shock targeted leaders into visceral responses. Historically short-lived, these responses are based on the pressures of representative government and the tendency to overestimate the capability of terror weapons while underestimating the resilience of the population.

### ***About the Author***

Maj C. G. C. Treadway graduated from the USAF Academy in 1979 and, after pilot training, joined the first group of lieutenants in the newly operational F-16. His first two assignments were at Nellis Air Force Base (AFB), Nevada, and Torrejon Air Base (AB), Spain, where he also flew as a United States Air Force Europe (USAFE) F-16 demonstration pilot. After completion of language training at the Defense Language Institute in Monterey, California, Major Treadway served as the USAF exchange officer to the Royal Norwegian Air Force, flying out of Rygge AB, Norway. Following his next F-16 assignment with the USAFE Aggressors at Bentwaters AB, U. K., he was reassigned to the F-117 at Tonopah Test Range and deployed to Saudi Arabia for Desert Shield/Desert Storm. In 1992, he returned to Norway for North Atlantic Treaty Organization (NATO) joint staff duty at Allied Forces North, near Oslo. Selected for Air Command and Staff College in 1993, Major Treadway was a distinguished graduate and remained at Maxwell AFB to attend the School of Advanced Airpower Studies (SAAS). He has a bachelor's degree in history from the Air Force Academy, a master's degree in military history from the University of Alabama, and a Master of Airpower Arts and Sciences degree from SAAS. He was assigned to the joint staff at the Pentagon in 1995.

## Chapter 1

### Introduction

*Innocence is the quintessential condition of terrorist victimology, for the terrorist victim is not the ultimate target. When political terrorists strike out at innocent third parties, their real intent is the destabilization of governments and a demoralization, or even panic, among the public at large.*

—Robert A. Friedlander

As the first Scud missiles slammed into Tel Aviv in the early morning hours of 17 January 1991, the world held its breath. Saddam Hussein had launched his expected terror campaign against Israel and the fate of the allied coalition hung on the Israeli response. Syria's disapproval of any Israeli involvement in the war was already public record. In fact, support from any of the Arab states was uncertain if Israel joined the fight against their rogue brother.

The force which the United States, the United Kingdom, France, and other friendly powers had deployed in the desert was large. It had taken six months to assemble and had grown to over 500,000 personnel, supported by millions of tons of equipment and billions of dollars of infrastructure. President George Bush, using political connections and relationships nurtured over decades of governmental service, had fabricated an extraordinarily effective coalition. It was a remarkable achievement.

Yet, all this hung in the balance. It was threatened by an attack of limited scale causing minimal physical destruction. Saddam Hussein had ventured a handful of mediocre weapons and stood to gain an enormous political victory with decisive military implications. If he could destroy the allied coalition, the return on his investment would be colossal.

The Israeli response was, in fact, limited to a promise of future retaliation when such an action would not suit Hussein's purposes, but the price for their forbearance was high: increased US missile defense, a huge retasking of coalition airpower against the Scud threat in western Iraq, and a hefty postwar financial quid pro quo. The fact remains, however, that a relatively minor missile attack against a people already accustomed to terrorism was expected to trigger a coalition-altering response.

In light of this remarkable exchange, there are questions that demand investigation and answers. Why would an attack by a handful of aerial terror weapons generate such a disproportionate response? After all, during the Second World War, years of terror bombing against England and Germany produced no more than questionable strategic results. If exhaustive terror

campaigns have only questionable value, can annoying, limited raids succeed? If so, why? And what are the implications for American leadership?

The answer to the first of these questions may lie in the specific circumstances—in this case, specific circumstances surrounding the Gulf War. Since any Israeli involvement promised to have strategic implications, the Scud attacks had the potential to capitalize on this unique and critical flaw in the allied coalition's armor. Therefore, this case stands as the quintessential example of the potential for aerial terror attack to have profound, perhaps decisive, strategic effects. As the most recent experience with aerial terror and one that seems likely to be emulated in the future, it behooves us to examine such "nuisance" raids and search for patterns in reactions to them.

To begin that task, this study explores, first, the ethos of terrorism, which thrives on the relationship between violence and its victims. It then examines aerial terror weapons, exploring their unique characteristics, reputations, and effects. Such an understanding of terrorism's utility and the character of aerial weaponry should serve as a framework for examining the most notable nuisance raids of the twentieth century.

This paper concentrates on three campaigns where aerial terror attacks had a profound impact: the Zeppelin raids, followed by the Gotha and Giant bomber raids, on London during the First World War; the V-1 and V-2 raids on London during the Second World War; and the Scud attacks against Israel during Desert Storm. Examination of each campaign encompasses a historical review, a comparison of the physical effects of these raids to corresponding conventional operations, and the reactions they provoked.

These three campaigns are analyzed to determine their impacts on their ultimate targets: governmental reaction. The analyses include not only the specific effects of the raids on the populace but also the responses such effects elicited from the leadership. The link between the sudden victimization of helpless civilians and the reactions of their leaders helps to clarify the conclusion of this investigation—that there is a pattern of governmental overreaction to aerial nuisance attacks. The overreaction is a "knee-jerk" response, based on an overestimation of the effects of these raids and a corresponding underestimation of human resilience.

Having explored the nature of aerial terror weapons, examined three nuisance campaigns in which they were used, and analyzed the resulting popular effects and government reactions, this study concludes with a discussion of the implications for American leaders. Finally, there are recommendations for those leaders.

Hussein's gamble was not a fluke; it was a measured action with historical merit, and it may well portend the shape of things to come. When something as large and powerful as the allied coalition during the Gulf War can be held hostage by a handful of militarily inconsequential weapons, Western leaders should sit up and notice; America's potential antagonists certainly did.

## Chapter 2

# The Anatomy of Terror

*Terrorism represents abominable means used for contemptible ends.*

—Robert A. Friedlander

To lay the basis for our study of aerial nuisance campaigns, we look first to understand the general nature of terrorism and the unique characteristics of aerial terror weapons. Since modern terrorism, fueled by mass communication, has exploded onto the world stage, a great deal of interest and much considered thought has sprung up on the subject. A glance at the recent works of some of the respected theorists in the field reveals remarkable agreement on a general definition of terrorism and its victims. A close look at air-delivered weapons reveals that they are uniquely qualified as tools of terror.

## Terrorism

Though definitions of terrorism may differ in their details, a common theme runs through each. Friedlander defines terrorism as “a tactic or technique by means of which a violent act or the threat thereof is used for the prime purpose of creating overwhelming fear for coercive purposes.”<sup>1</sup> Grant Wardlaw says, “terrorism is violence for effect. The actual physical damage it causes is often not . . . important. . . . The aim is to have a dramatic impact on the audience.”<sup>2</sup> Although William Waugh avoids a rigorous definition because “many analysts and writers have simply taken the attitude that they know it when they see it and so do their readers,” he does go on to enumerate the aspects of terrorism that are consensually supported.

1. Terrorism involves the use or threat of extraordinary violence.
2. Terrorism is goal-oriented action (i.e., terrorists have goals and objectives beyond the creation of destruction, injury, and death).
3. The aim of terrorism is its psychological impact on an individual or individuals apart from its immediate victims.
4. The victims of terrorism are chosen for their symbolic, rather than instrumental, value.<sup>3</sup>

Although expressed differently, these three explanations of terrorism are wound around a common theme: the use of *violence* to create *fear* for coercive *impact*.

Terrorist violence differs from its conventional cousin in both nature and targeting. Over the centuries, Western military history has been characterized by the ever-increasing capability to wreak greater and greater destruction upon the enemy in the field. The advent of new weapons, from the long bow to gunpowder to the Maxim gun to cluster bombs, has carried with it the improved capacity for physical destruction. The First World War's killing fields in France and Flanders stand as exemplars of this dubious progress: Warring opponents hurled themselves against mass-produced weaponry that had been designed and built for maximum destructive effect. Over 14 million battlefield casualties resulted.<sup>4</sup> Twenty-five years later, today's zenith of physical violence took shape in the form of nuclear weaponry.

Although terrorist firepower has also increased, thanks to automatic weapons and modern explosives, the nature of terrorist violence is different from that of conventional violence. Waugh suggests that the significance of terrorism "does not lie in the number of lives taken or the amount of destruction inflicted; it lies in the number of lives threatened and in the amount of fear and terror generated."<sup>5</sup> Terrorism's goal, then, is not maximum physical damage; it is, rather, maximum psychological damage. David G. Hubbard, in *Winning Back the Sky: A Tactical Analysis of Terrorism*, comments on America's psychological vulnerability:

This may sound callous, but it is nevertheless true. The number of deaths caused by terrorism is statistically insignificant; compare it to the death toll from famine in sub-Saharan Africa, or the annual carnage on our own highways. Our problem is not the loss of life, it is a loss of perspective. The real threat of terrorism is the disproportion of our national character and goals, and this is a threat we pose to ourselves.<sup>6</sup>

President Ronald Reagan's powerful (and risky) 1986 air strike against Libya after terrorist attacks in two airports and a Berlin nightclub illustrates the type of response that can be triggered by the loss of relatively few lives.

Thomas C. Schelling also explores this coercive mechanism in his seminal work, *Arms and Influence*.<sup>7</sup> His "risk strategy" is based on threatening what an enemy values and demonstrating both capability and willingness to destroy such things if the enemy does not respond appropriately. It is, therefore, the fear created by nuisance attacks and threats of attacks that drives a targeted leadership's response. This strategy attacks the minds of its victims—not only those relatively few who suffer its direct violence but also those who act as a result of it. It is the choice of victims that accounts for terrorism's other difference from conventional violence.

Terrorism preys on the traditionally secure elements of society. This contrasts sharply with the Western mindset, which frowns on civilian "collateral damage." International laws governing the legal prosecution of war have attempted to define and protect civilians as noncombatants. Generally accepted rules of "human decency" have further attempted to insulate the populace from direct attack. As a result, although indirect popular suffering from conventional violence seems historically inevitable, it has rarely been the prime objective in warfare. Even though cities were considered supportable

military targets by the Allied combined bomber offensive (CBO) in the Second World War, the lingering controversy over its civilian casualties attests to an underlying repugnance toward targeting a populace in order to coerce its leadership.

By targeting that portion of society which has traditionally been exempt from direct attack, terrorism seeks to generate a visceral response from its victims. Friedlander says, "terrorism means the use of violence for the purpose of putting the public or any section of the public in fear."<sup>8</sup> Targeted by unexpected and unnatural violence, the public's safety is held for ransom. It is the public's fear, and the resulting panic, which is expected to drive the decisions of those responsible for protecting them.

The final part of the equation linking terrorism's violence to its victims is coercion of the "ultimate target": leadership. Representative government is accountable for the protection of its citizens. When their security is threatened, the government's credibility is at risk. Because leaders suffer from the same basic human frailties as their constituents, they too can be expected to respond emotionally. One might react reflexively while a more calculating head of state might act to maintain popular support. Leadership's overreaction in response to violence against its citizenry is the cause-and-effect relationship upon which terrorism thrives.

Violence, fear, and coercion are the properties of terrorism, which seeks out victims whose fear can produce political change. Since civilian security is so important to national leadership, threats to that security can be used for terrorist leverage. Airpower, capable of bypassing normal ground defenses and striking a nation's vulnerable populace, would seem to be the natural weapon for terrorism.

### **Airpower for Terrorist Purposes**

The very nature of airpower lends itself to use for terror. As a relative newcomer to the world stage, airpower holds a mystique for many of its potential victims. This has resulted in an exaggeration of its actual destructive ability. When airpower was used in conflict during the first half of this century, technical limitations led to inaccurate targeting, a result which generated fear among the potential victims. Finally, the great distances between aerial attackers and their victims amplifies the perceived differences in shared risks. Airpower's reputation, both earned and undeserved, makes it an optimal terror weapon.

From its earliest days, powered flight has inspired the imaginations of an inquisitive and admiring public, which, in turn, has led to an exaggerated impression of its real capabilities. Its technical nature so mystified people that they lionized the daredevils who risked the unnatural hazards of flight. Popular turn-of-the-century fiction, like H. G. Wells's *The War in the Air*, fed a burgeoning public interest in the revolutionary new flying machines. Wells's

imaginary giant airships roamed the globe from Europe to North America, fighting epic battles that led to British defeat, economic collapse, panic, famine, and plague.<sup>9</sup> Actual German Zeppelin attacks on the British capital only a few years later, though not as destructive as Wells's fantasies, gave credence to his and others' fictions, which, in turn, fed fears of future aerial attack.

The interwar years saw a dramatic increase in the destructive reputation of airpower. Since the aircraft had emerged from the First World War as a weapon of great significance, its capabilities were expected to continue to improve at rapid rates. According to J. T. MacCurdy, pacifist propaganda and Hollywood were particularly influential in magnifying the public's fears of aerial terror attack. Pacifists demonized war by preying on the public's growing fears of aerial attack. "Bombs were made the symbol of war's wanton carnage and women and children the symbols of the innocent."<sup>10</sup> Hollywood then reinforced these images by producing films that used bombing for dramatic effect.

Every bomb hit its target and, when it did so, destruction was complete. Here was vivid, realistic proof of what was feared. To be in a target area would mean certain death or hideous mutilation. The only possible means of survival were absence from the area or shelter so deep underground that even these seismic explosions could not reach one. Otherwise there would be nothing one could do and . . . there is nothing so conducive to fear as not knowing what to do.<sup>11</sup>

Even existing evidence of popular resilience and adaptation to bombing in both Spain and China failed to assuage an anxious and fearful British public.<sup>12</sup> And the powerful imagery that permeated England on the eve of the Second World War still exists today!

Despite continual improvements in aerial technology throughout the twentieth century, air weapons have only recently achieved any true precision capability. The air campaigns of both world wars dropped imprecisely targeted and therefore relatively unpredictable bombs. The best intentions of American daylight "precision" bombing during the combined bomber offensive could not prevent extensive collateral damage against civilians. Even the relatively modern missile technology employed by Hussein during the Gulf War had limited accuracy. The results of such imprecision have contributed to airpower's reputation for indiscriminate slaughter.

Aviators, struggling with airpower's imprecision, chose targets large enough to achieve recognizable results. Cities were their logical choices, and civilians became the hapless victims. In fact, early aviation enthusiast Giulio Douhet believed that a quick, destructive, aerial terror campaign against a nation's civilian population would cause the panic required to coerce the leadership into surrender. This, he claimed, would prevent the horrendous death toll of the stagnant trench warfare Europe had just experienced. Douhet's reputation, and the bombing of cities in World Wars I and II, continue to fuel airpower's identification with civilian terror.<sup>13</sup>

Another factor making aerial weaponry so amenable to terror attack is the perceived difference in risks between attacker and victim. Air raid victims of

the First World War watched as small aircraft, traveling in an ocean of sky, dispensed weapons onto city-sized targets from thousands of feet in the air. One aircrew, maneuvering with relative impunity, could threaten countless lives below. In the Second World War, missiles were sent across great distances from different countries. The fact that the attacker could launch weapons from the security of a high-flying aircraft or from a distant bunker helped create a perception of risk inequity as victims on the ground, frequently unaware of any impending attack, suffered the destructive impact. Such perceived imbalance smacked of "dirty fighting" and helped promote the terror effect of aerial weapons.

From a common definition to its aerial means of delivery, terrorism describes extreme violence aimed at those whose suffering and fear will produce the greatest coercive effect on the real target—government leaders. This violence does not seek to inflict the maximum amount of physical destruction; rather, it channels selective violence for psychological effect. Inflicted upon those normally excluded from direct hostilities, terrorism produces fear that leads to visceral reactions from both populace and leadership. Aerial weapons are perfectly adaptable to terrorist purposes.

### Notes

1. Robert A. Friedlander, *Terrorism—Violence: Aspects of Social Control* (New York: Oceana Publications, Inc., 1983), 3.
2. Grant Wardlaw, *Political Terrorism: Theory, Tactics and Counter-measures* (Cambridge: Cambridge University Press, 1989), 43–44.
3. William L. Waugh, *International Terrorism: How Nations Respond to Terrorists* (Salisbury, N.C.: Documentary Publications, Inc., 1982), 27.
4. Michael Clodfelter, *Warfare and Armed Conflicts, A Statistical Reference to Casualty and Other Figures 1618–1991*, vol. II (Jefferson, N.C.: MacFarland & Co., Inc., 1992), 783–87. This number does not even include battlefield casualties from either the eastern or Italian fronts or any MIA, losses from sickness, or civilian casualties.
5. Waugh, 73.
6. David G. Hubbard, *Winning Back the Sky: A Tactical Analysis of Terrorism* (San Francisco: Saybrook Publishers, 1986), xii.
7. Thomas C. Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966).
8. Friedlander, 3.
9. H. G. Wells, *The War in the Air* (London: Collins Clear-Type Press, 1921).
10. J. T. MacCurdy, *The Structure of Morale* (Cambridge [Eng.] The University Press: MacMillan, 1943), 9.
11. Ibid.
12. During the Spanish Civil War and the Japanese incursion into China, cities were targeted and damaged by aerial attack. Although there was great civilian suffering in cities like Barcelona and Shanghai, the people did not rise up and force political change.
13. Douhet's landmark 1921 work, *The Command of the Air*, was the first to address airpower's potential as a decisive instrument of war. It influenced aviation pioneers between the World Wars and remains one of the foundations for modern airpower advocacy. Other advocates who contributed to airpower's reputation as an offensive tool include Gens William "Billy" Mitchell and Hugh Trenchard and Maj Alexander de Seversky.

## Chapter 3

# Beyond the Trenches

*Then England was to be terrorized into despair by Zeppelins. London, that . . . newly discovered fortress, was to be fired from the sky.*

—The Times  
14 June 1917

The First World War witnessed the introduction of aerial terror attacks. Germany, eager to carry the war beyond the stalemate in northern France, attacked England from the air. These attacks, lasting over 40 months, brought some of the terror of the trenches to England's capital city. Having brought terror to English civilians at home, these German aircraft might be considered the first invaders of the English homeland since 1066.

## Raids on London

The first German air attack against England occurred on Christmas Eve 1914, when a single small bomb was dropped by an aeroplane into a garden in Dover. Since Kaiser Wilhelm, one of Queen Victoria's grandsons, was initially opposed to any bombing of civilians, air raids in early 1915 were confined to coastal targets. By May, however, pressure from his commanders led the Kaiser to sign a directive permitting raids "to the east of the Tower of London."<sup>1</sup> An army airship dropped the first bombs on London the next day.

Airship attacks on England continued throughout 1915 and 1916, but their impunity was diminishing as they roamed English airspace at night. By 1917, the British air defense system, spurred by popular outcry and political pressure, had evolved to the point where Zeppelins were suffering prohibitive losses to more agile British aircraft equipped with incendiary ammunition. The airships, despite their high-load capacity, were too expensive to justify their losses when compared to the relatively small amount of destruction they caused. Also by 1917, the German Air Force had developed bomber aircraft with sufficient range to hit London from bases in Belgium.

By 25 May 1917, Germany was ready to launch these bombers against London. Because Hauptmann Ernst Brandenburg, commanding the new wing of Gotha G.IV aircraft, was unable to reach the British capital that

day, he dropped his bombs on Dover, inflicting 290 casualties. Seventy-four British aircraft launched against the invaders were ineffective. Brandenburg's Gotha G.IVs attacked again on 13 June and dropped bombs on London at midday. One of the bombs from that attack destroyed an infants' school, killing 16 children and wounding 30 others. In all, the day's raids took 162 lives and injured 432 more. It was the largest casualty toll from a single raid on Britain in the First World War.<sup>2</sup>

London, suffering 250 more casualties when bombed again on 7 July, saw the last of the daylight raids in August. These raids were followed by a series of night strikes, however, flown not only by the Gothas but also by new Giant R-type bombers capable of carrying 5,000-pound (lb) payloads. By the end of September 1917, the combination of night-bombing inaccuracy, spent anti-aircraft (AAA) shells falling back onto the city, and the high number of night raids had driven as many as 300,000 Londoners into the refuge of the subways.<sup>3</sup> The Germans introduced incendiary weapons in October and dropped almost 20,000 lbs of bombs on London and Kent during one December raid. The assaults continued through the winter and spring, the final raid occurring on 19/20 May 1918. By then, a combination of pressure for tactical air support from German ground commanders and a casualty rate of 15 percent for the bombers had resulted in discontinuation of the bombing.<sup>4</sup>

The raids on England had actually been only a sidelight to operations on the continent. Germany had employed about one-quarter of its heavy bomber strength in the campaign—no more than 40 aircraft at any one time. The bombing never represented a major threat to England's wartime survival, but the images of German aircraft spilling their bomb loads onto London would have profound implications.

These figures represent the losses from all terror raids against London during the First World War. In contrast, however, just the first day of the Battle of the Somme, launched on 1 July 1916, resulted in 19,240 British troops killed, 35,215 wounded and 2,152 missing. This single ground campaign, in terms of casualties, was costlier than all British war losses in the preceding century.<sup>5</sup> It was just one of many horrific ground battles during a war that cost Britain a total of 3,058,983 casualties. Of this number, the losses from aerial terror raids on London represent less than one-tenth of one percent. The two million pounds sterling worth of damage calculated above is also small in comparison to over £13 billion of total war cost to Britain, less than two one-hundredths of one percent. The physical costs of the aerial terror hurled against London were practically negligible.

## **The Leadership Reacts**

Though the aerial raids produced negligible physical damage, they had pronounced psychological effects on both the populace and the leadership of

**Table 1**  
**Damage from WWI Bombing Raids on London**

	<u>Killed</u>	<u>Injured</u>	<u>Damage (£)</u>
31 May 1915	7	32	18,396
17 Aug 1915	10	48	5,000
7/8 Sep 1915	18	38	7,809
8/9 Sep 1915	22	87	530,787
14/15 Oct 1915	38	87	50,250
24/25 Aug 1916	9	40	130,000
23/24 Sep 1916	26	73	64,662
28 Nov 1916	0	10	1,585
6/7 May 1917	1	1	510
13 Jun 1917	145	382	125,953
7 Jul 1917	53	182	203,821
4/5 Sep 1917	14	48	31,548
24 Sep 1917	14	49	24,002
25 Sep 1917	6	21	16,101
29 Sep 1917	13	86	21,873
30 Sep 1917	3	29	7,600
15 Oct 1917	11	41	44,094
19 Oct 1917	33	49	48,205
1 Nov 1917	6	5	7,443
6 Dec 1917	3	15	92,447
18 Dec 1917	13	79	225,016
28/29 Jan 1918	65	159	172,677
16 Feb 1918	12	6	18,229
17/18 Feb 1918	21	32	38,898
7/8 Mar 1918	22	29	30,530
19 May 1918	39	128	130,773
Total	604	1,756	£2,044,199

**Source:** Albert Henry Ross, *War on Great Cities: A Study of the Facts*, by Frank Morison (pseudonym) (London: Faber and Faber, Ltd., 1937), 207–34.

Britain. Accounts of civilian reactions offer up vivid images, as exemplified in a letter received by Lord Balfour after an early Zeppelin attack and in the words of Prime Minister David Lloyd George as he remembered the attack of 7 July 1917:

Citizens of all classes are in a state of great alarm; the night after the raid a further warning was given and tens of thousands of people trooped out of the city. The screams of the women were distressing to hear.<sup>6</sup>

At the slightest rumour of approaching aeroplanes, tubes and tunnels were packed with panic stricken men, women and children. Every clear night the commons around London were black with refugees from the threatened metropolis.<sup>7</sup>

Lloyd George was also personally affected by the raids, forsaking nights at the official residence at No. 10 Downing Street for the security of a small house in the London suburbs.<sup>8</sup> Such accounts and reminiscences reflect the anxiety which gripped the capital and pressured England's wartime leaders to respond.

As a result of the initial Zeppelin raids along the coast, Lloyd George and his War Cabinet considered retaliatory strikes against Germany. After the first raid on London, they recalled Gen Douglas Haig and Gen Hugh Trenchard from France to consider these reprisals and a proposed expansion of the Royal Flying Corps from 108 to two hundred squadrons. Lloyd George

commissioned a study to consider not only home defense but also “the air organization generally and the direction of aerial operations.”<sup>9</sup>

The committee, chaired by Jan-Christian Smuts, delivered two reports within a month. The first, building on previously accepted recommendations, consolidated and invigorated London’s air defense. Its most significant aspect was the reallocation, over Trenchard’s objections, of eight full fighter squadrons (approximately 150 frontline aircraft) from the continent to England. This move was intended to provide enough air defense to quiet Lloyd George’s frightened detractors.

The second Smuts report had much larger implications. Released on 17 August 1917, it provided for the creation of an independent air service to conduct both defensive and offensive retaliatory operations. Over the muted objections of both the army and the navy, Smuts consolidated many of their previous missions under a new, unified, independent command—the Royal Air Force (RAF). Similar administrative and material ideas had been proposed earlier but unsuccessfully by Lords Henderson and Cowdray. Now, however, “demands for protection and retaliation pressed not only in the newspapers, but also in public petitions to the government”<sup>10</sup> provided Smuts an environment conducive to revolutionary change.

In 1917, England was in the throes of a war that was producing millions of casualties in the bloody trenches. Yet, such extraordinary losses had not spurred the British government to make great changes in airpower or its operational use on the battlefield. Rather, it was the relatively negligible civilian losses from the terror bombing of London that led to the doubling of aircraft purchases, the reallocation of airpower from the front to England, and the creation of the world’s first independent air force. Airpower had come of age.

#### Notes

1. Francis K. Mason, *Battle Over Britain, A History of the German Air Assaults on Great Britain, 1917–18 and July–December 1940, and the Development of Britain’s Air Defenses Between the World Wars* (London: Aston, 1990).

2. Ibid., 18.

3. Ibid., 23.

4. Robin Cross, *The Bombers* (New York: MacMillan Publishing Co., 1987).

5. Michael Clodfelter, *Warfare and Armed Conflicts, A Statistical Reference to Casualty and Other Figures, 1618–1991*, vol. II (Jefferson, N.C.: McFarland & Co., Inc., 1992).

6. R. A. Mason, *Air Power and Warfare* (Sourced from SAAS course 622 reference material), 26.

7. David Lloyd George, *War Memoirs of David Lloyd George* (Boston: Little, Brown & Co., 1934).

8. David R. Woodward, *Lloyd George and the Generals* (Newark, Del.: University of Delaware Press, 1983).

9. *The Times*, 8 July 1917.

10. Malcolm Cooper, *The Birth of Independent Air Power* (London: Allen & Unwin, 1986), 102.

## Chapter 4

### **“V” for Vengeance**

*This is the decisive weapon of the war. God help us if the enemy finds out about this business.*

—Adolf Hitler

It is interesting to note that Britain, the target of aerial terror attacks during the First World War, built not only a strong air defense system during the interwar period, but also a long-range strategic bombing force capable of carrying similar attacks to future enemies. Germany, on the other hand, the strategic innovator from 1914 to 1918, saw only secondary merit in the results of the raids on London; its airpower development was concentrated instead on operational support for maneuvering ground forces. These perceptual differences would play themselves out in the skies above Europe during the Second World War.

### **The Blitz**

The Luftwaffe, equipped predominantly with medium bombers and short-range fighters, failed to win mastery of the air above southeast England during the Battle of Britain in the summer of 1940. The campaign, initially waged against RAF Fighter Command, targeted production facilities and fighter aerodromes. Unaware of the extensive destruction inflicted on the targeted infrastructure, the Luftwaffe then turned its bombers against London in an effort to coax RAF fighters into the air in large enough numbers to inflict one catastrophic blow. British fighters frustrated the German plan, however, and continued to meet the attackers in coordinated, piecemeal defense. The Luftwaffe's medium bombers, lightly armed and only partially defended by range-limited fighters, suffered prohibitive losses against the RAF's coordinated defense.<sup>1</sup> The Luftwaffe then shifted its attack to night raids designed to terrorize the British civilian population and force the British government to negotiate.

The German blitz, which lasted into the winter of 1940–1941, was a concentrated campaign of nightly incendiary raids aimed at England's civilian morale. Cloaked in darkness, the Luftwaffe bombers avoided most RAF defenses and caused great damage; but they did not force the British to negotiate. In fact, the campaign strengthened British morale by creating a

spirit of shared risks and involvement between England's warriors and her citizens. Another factor strengthening the English spirit was knowledge that RAF bombers were returning the destruction, in kind, to Germany's cities.<sup>2</sup>

Hitler's campaign of civilian terror bombing did not produce the decisive results he had hoped for. The English populace adapted to their steady dose of nightly terror and proved resilient under the threat of manned bombers. Every time a German aircraft was lost, English civilians saw the price Germany had to pay for its continued campaign of terror. By 1944, England had proved it could weather Hitler's aerial wrath and return it in kind. A new kind of aerial terror, however, would soon prove more effective against the determined British.

## **The "V" Weapons**

On 13 June 1944, one week after the Allied landings in Normandy, Hitler unleashed a new kind of weapon on England. The result of years of research and development, the Fieseler 103, later FZG 76 and, finally, V-1 (for vengeance), was an unmanned, pulse-jet-powered flying bomb.<sup>3</sup> Only 25 feet long with a wingspan of 16 feet and a 1,000-lb warhead, its maximum range was initially about 160 miles. Launched from a ramp, the missile flew along a preset trajectory to a desired distance, which was determined by an onboard windmill, then dove on the target below.

The first V-1 attack was not a total surprise to Allied leaders; British intelligence had received surreptitious reports about Germany's secret weapons for years. Reconnaissance photos of the secret Nazi facilities at Peenemünde confirmed the extent of the programs and prompted an Allied response. On the night of 17 August 1943, nearly six hundred RAF heavy bombers attacked Peenemünde. The attack resulted in heavy damage to the Peenemünde facilities, but the RAF lost 40 aircraft and 240 men. Allied photo intelligence then located and confirmed several suspicious launch sites in northern France, Normandy, and the Pas de Calais. These permanent ramps were bombed by Allied air units in Operation Crossbow from December 1943 until early spring 1944, when Allied leaders were convinced that the V-1 threat had been minimized. The Germans, however, had constructed prefabricated launch sites that could be moved and quickly erected for V-1 attacks.

Germany launched 10,492 V-1s against London during the next 13 months, 7,488 of which reached England and 2,420 hit London.<sup>4</sup> Between June and September 1944, during which London was the main target, V-1 raids caused nearly six thousand casualties and £48 million in damages (including lost production).<sup>5</sup> The "Buzz Bombs," as they were called, could be intercepted by radar-cued fighters and targeted by antiaircraft fire as well. When the weapons reached their programmed distance and nosed over, fuel starvation

caused their engines to quit. As a result, both the approach and the impending impact of the V-1s were communicated to the populace below.

But the V-1 was only the first of Hitler's new, unmanned terror weapons. Less than three months after the V-1 campaign began, Germany employed its other secret weapon against British morale. On 8 September, a large unexplained explosion in Chiswick resulted in 13 casualties. Although the first reports blamed gas explosions because no visual or audible warnings had been detected, Allied leaders surmised differently.

The same intelligence information that had warned the Allies of the V-1 had also predicted the new V-2 rocket. Produced at Peenemünde, it was the main target during the RAF raid on that facility. A subject of much interest and concern to Churchill and his inner circle, the V-2 (originally referred to as the A-4) was a finned rocket that reached heights of 50 to 60 miles. It was 46 feet long, liquid-fueled, and equipped with a 1000-lb warhead. Its supersonic velocity (3,600 MPH) meant that the V-2's impact preceded any audible warning. And since the gyroscopically steered rocket reached London just over five minutes after launch, there was little if any warning of any kind for its unsuspecting victims.<sup>6</sup>

Between its first attack in September 1944 and the final launch on 27 March 1945, approximately 1,300 V-2s were fired against London; 517 of them reached their target, resulting in 2,511 deaths and 5,869 wounded.<sup>7</sup> However, the reactions produced by the "V" weapons should be considered in light of conventional bombing and cross-channel artillery fire aimed at England during the Second World War.

## Effects of the Raids

The following statistics reflect civilian casualties inflicted upon Great Britain by the various forms of long-range bombardment.

**Table 2**  
**Casualties from WWII Raids on Great Britain**

	<u>Killed</u>	<u>Injured</u>	<u>Total</u>
Bombing	51,509	61,423	112,932
Flying Bombs (V-1)	6,148	17,981	24,129
Rockets (V-2)	2,754	6,523	9,277
Cross-Channel Guns	148	255	403
Total	60,559	86,182	146,741

**Source:** Winston G. Ramsey, ed., *The Blitz Then and Now*, vol. 2 (London: Battle of Britain Prints International Ltd., 1988), 6. This table is based on data in *The Defence of the United Kingdom*, Official War History Series.

Conventional bombing resulted in almost six times as many British deaths as the combined totals of V-1 and V-2 raids, and more than twice as many

injured. Despite England's experience with more destructive bombing, however, and despite the obvious diversionary nature of the "V" attacks as well as the price of reacting to them, Allied airpower was diverted to defend against the rockets. Allied forces had already invaded the continent, Germany was on the defensive, and an end to the war was in sight when Hitler launched these terror weapons against England. The purpose of these terror attacks was clearly to exact revenge and divert Allied airpower from support of the advancing Allied ground forces.

Concern over the V-1s and V-2s had resulted in costly Allied action even before their employment. Peenemünde had been attacked at heavy cost in both aircraft and men. Operation Crossbow, conducted over three months, had taken valuable sorties away from the CBO against Germany. Part of the understandable concern can be traced to exaggerated and conflicting intelligence about Hitler's new weapons. For example, the reported size of the V-2 ranged from one ton to one hundred tons—and expectations of its destructive capabilities varied accordingly. Consider this report, filed by a secret agent who was close to the German rocket commander:

Major Sommerfeld, Colonel Wachtel's technical adviser, estimates that 50–100 of these bombs would suffice to destroy London. The batteries will be so sited that they can methodically destroy most of Britain's large cities during the winter.<sup>8</sup>

The British populace responded differently to the two weapons. Because the launch and flight track of the V-1 were monitored by British radar, air raid sirens could be sounded in time to warn of their arrival. Advanced warning had its disadvantages, however, one of which was that the constant sirens interrupted the population's work and sleep cycles.

For most, the worst part was the constant stream of Alerts, antiaircraft fire, and All Clears that chased each other through all hours of the day and night. It was normal for the sirens to go any number of times, usually a minimum of six and a maximum of ten or eleven, every day, for weeks on end.<sup>9</sup>

By the end of the first two weeks of V-1 attacks, production in London factories had dropped by 16 percent. "Much of the time lost was due to the constant Alerts, which kept workers in the shelters an average of one working day every week."<sup>10</sup>

The audible approach of the "Buzz Bomb" provided its own warning and had a sinister effect. Because the V-1's engine cut out 10-to-15 seconds before impact, those who were close enough to hear the engine stop were also those who might be within range of the explosive impact. In other words, many of the victims knew for up to 15 terrorizing seconds what stood in store for them. As a result, folklore and exaggeration about the weapons grew with each attack.

The V-2, on the other hand, launched, approached and impacted without warning. Because of its extreme speed and altitude, radar-cued air raid warnings were impossible. Because it impacted at over 2,500 MPH, its explosion was the first sight and sound offered to its victims. Paradoxically, although the V-2 was a far more technologically complex weapon with greater

range and destructive effect than the V-1, its psychological impact was less disruptive. Since there was no warning, and little that one could do, Londoners developed a fatalistic, almost casual detachment toward the V-2 rocket.<sup>11</sup>

## **The Leadership Reacts**

Government reaction to the V-1/V-2 terror raids was impulsive and disproportionate. When, on 18 June, a V-1 hit the Wellington Barracks Guards chapel, killing 119 and wounding 141, Winston Churchill and Dwight Eisenhower reacted immediately. Churchill evacuated the House of Commons and moved to new quarters for the first time since the height of the blitz almost four years before. Eisenhower ordered that air attacks against the V-1 launching sites should have precedence over all else "except for the most urgent requirements of the battle of Normandy."<sup>12</sup> This order, issued over the loud objections of Eisenhower's air commanders, diverted over 30 percent of the RAF and United States Army Air Forces (USAAF) bomber forces away from their strategic campaign against Germany. In July and August this amounted to more than 1,000 sorties.

When the V-2 campaign began, Allied leaders were again influenced to overreact. On 30 August, Allied airpower was diverted from an armed reconnaissance of the presumed launching sites in France and Belgium. The reconnaissance operation broke off until the actual launchings were pinpointed in Holland. The V-2 attacks were accomplishing part of Hitler's purpose: diversion of Allied forces from the battles in France, the Low Countries, and, eventually, Germany.

Perhaps the greatest diversion of forces created by the V-2 attacks occurred during Operation Market Garden. The brainchild of Field Marshal Sir Bernard L. Montgomery, Market Garden called for Allied airborne landings in Holland to pave the way for a rapid thrust through Germany's industrial Ruhr region to Berlin. A major departure from Eisenhower's "broad front" strategy, this plan had been disapproved by Ike on numerous previous occasions. He believed operations in the low countries should be preceded by activation of the port at Antwerp, which would involve capturing the long, narrow approaches to Antwerp that were still occupied by the Wehrmacht.

Interested in avoiding a feud with the popular British field marshal, Eisenhower met with him again on 10 September 1944, just two days after the first V-2 attack on London. Montgomery continued to insist on the soundness of his plan, this time adding a new argument. Intelligence, he pointed out, had located the V-2 launch sites somewhere in western Holland and his plan, if successful, would neutralize that threat.

Although he was certain that Montgomery was a bit too optimistic about the Arnhem operation—it probably would not put the Allies in Berlin by the year's end—Eisenhower not only approved the plan, but gave it top priority, insisting that

it start as soon as possible. The airdrop was well worth the risk, especially since the V-2 rocket attack had begun.<sup>13</sup>

The plan, which had previously been unacceptable, was given top priority after the V-2 attacks began.

#### Notes

1. The Luftwaffe was developing a long-range bomber, the He 177, and possessed a long-range escort.
2. A subsequent German night bombing campaign, the so-called Baby Blitz of 1943, was even less effective and more costly for the attackers.
3. The German term for *vengeance* is *vergeltung*.
4. Basil Collier, *The Battle of the V-Weapons 1944-45* (New York: William Morrow & Co., 1965), 179.
5. Josef Garlinski, *Hitler's Last Weapons: The Underground War Against the V-1 and V-2* (New York: Times Books, 1978), 230-31.
6. David Johnson, *V-1, V-2: Hitler's Vengeance on London* (New York: Stein & Day, 1981), 195.
7. Collier, 181. There is also evidence that Germany was working on a two-stage development called the A-9/A-10 for attacks against the United States.
8. Garlinski, 230-31.
9. Johnson, 54.
10. Ibid., 63.
11. Ibid., 156.
12. Ibid., 59.
13. Ibid., 138.

## Chapter 5

### Decisive Terror

*It is a whole different ball game when it comes to us, they should know we will hit them back one hundred times harder.*

—Yitzak Rabin, 1991

On 18 January 1991, Hussein reintroduced to the Western world the specter of terror from the sky. When the first few Scud missiles landed in and around Tel Aviv and the fate of the allied Gulf War coalition hung on the Israeli response, nuisance attacks by aerial terror weapons acquired a new status. This kind of raid, which in the past had been peripheral and diversionary, now might potentially have decisive strategic impact.

### Anticipating the Attack

When Iraq invaded Kuwait in 1990, aerial terror weapons had become vastly more powerful than those aimed at London in World War II. The Scuds lobbed at Israel during the opening stages of Operation Desert Storm were expected to contain chemical warheads; Israeli retaliation was expected to be swift and deadly. But since Israeli participation in the conflict was opposed by Arab members of the coalition, any Israeli response could have spelled the end of the united front against Iraq. Nuisance raids had become far more than just a nuisance.

Fears about Iraqi aerial attacks stemmed from Saddam Hussein's use of missiles and chemical weapons during the Iran-Iraq war. Iraq had fired over 350 Scuds at Iranian targets between 1982 and 1988. When Iran reciprocated, its missiles could reach all of Iraq's major cities while Iraq's missiles could initially reach only the smaller Iranian cities between Tehran and the border. By 1988, however, modified Iraqi Scuds were reaching Tehran. That year alone accounted for over half the missiles fired by Iraq during the conflict—and most were aimed at Tehran. This "War of the Cities" favored Iraq, which was able to launch about three missiles per day against an average Iranian attack of just one missile per day. The disproportion of this exchange was increased by a growing Iranian fear of chemical weapons, which resulted in nearly a million Iranians fleeing Tehran by mid-March 1988 and several million more by late April.<sup>1</sup>

Hussein had established a reputation for a willingness to use chemical weapons in military operations. Between May 1981 and March 1984, Iran accused Iraq of using chemical weapons to kill 1,200 Iranians and injure five thousand more. These charges stemmed from six separate border battles where the Iraqis used both mustard gas and a nerve agent called Tabun.<sup>2</sup> Iraq also used chemical weapons against rebellious Kurds.

At this point, we will find it useful to clarify the actual capabilities of Hussein's ballistic missiles and their chemical warheads. The Scud B is based on the Soviet SS-1 Scud missile, which was developed by captured German engineers after the Second World War. Fashioned along the lines of the V-2 and similar in size and performance, the missile is relatively inaccurate because it is guided only during the powered phase of flight. Since the Scud's circular error probable (CEP)<sup>3</sup> is one kilometer, it must be used against large targets. Its 1000-kilogram (kg) warhead further restricts its conventional lethality to about a 100-meter radius.<sup>4</sup> By modern standards, the Scud is not a highly sophisticated weapon.

Conventionally armed ballistic missiles without terminal homing-guided systems cannot even damage military targets as large as airfields except through sheer luck, since they have so little probability of hitting a meaningful target. They have less than a 0.3 Pk [Probability of kill] per round against a building-sized target when fired into a crowded city. Such missiles may have glamour but they are no substitute for aircraft, multiple rocket launchers, and artillery in inflicting damage.

Even missiles with chemical and biological warheads may be more terror weapons than weapons of mass destruction. It takes tons of even lethal nerve gases to produce large amounts of casualties. To put this into perspective, under optimal conditions, it takes about 21 tons of phosgene to achieve 50 percent lethality over a one square kilometer area, four tons of mustard gas, two tons of Tabun, 0.5 tons of Sarin, or 0.25 tons of VX.<sup>5</sup> Under most real world conditions, far larger amounts are required, and the actual number of deaths is far smaller.<sup>6</sup>

The perception of Hussein's Scuds, however, was more powerful than the reality.<sup>7</sup>

Anticipation of the Israeli response was also based on Israel's traditional reaction to terrorist attack. Since its birth as a state, Israel has taken a hard line against its enemies. Terrorism against Israeli targets has historically been met with massive military reprisal. Palestine Liberation Organization (PLO) bomb attacks usually attract air raids against the terrorists' strongholds. The assassination of Israeli citizens, once attributed to identifiable individuals or groups, produces international manhunts and eventual retribution. The raid on Entebbe, the retaliation against the terrorists of the 1972 Munich games, and the 1981 surgical strike against Iraq's Osirak reactor are famous—even legendary—examples of Israeli reprisal, revenge, and redress.

However, any Israeli response during the Gulf War would carry significant political ramifications. Military retaliation by Israel might provoke an expansion of the war along traditional Arab-Israeli lines. Offensive Israeli action, by ground or air, would have to cross Syrian, Jordanian, and/or Saudi

territory. Thus, the Israelis would run a substantial risk that one or more of these countries might retaliate against them.

Israeli action might also break the tenuous American-led Arab coalition. Although Egypt did express an understanding of Israel's right to defend itself, any Jewish involvement carried the distinct possibility of creating Muslim discord. Either way, the plan to defeat Hussein would be substantially—perhaps catastrophically—altered.

Since American policy makers expected and feared Israel's response, they began to spend their political capital even before the first attacks. In October 1990, the United States offered to supply Patriot missile batteries for Israel's defense; Israeli crews were being trained to operate the missile batteries when the war began. The United States also installed a secure satellite link between the Pentagon's National Military Communications Center and the Israeli Defense Force Headquarters. The system, code-named Hammer Rick, could be used to convey Scud launch information supplied by American intelligence assets. The State Department also offered a representative from the Joint Chiefs of Staff (a USAF major general) to act as a liaison between Israel and Washington during the expected hostilities. Finally, just days before the war began, Deputy Secretary of State Lawrence Eagleberger and Undersecretary of Defense Paul Wolfowitz, who were conducting a series of meetings with the Israeli cabinet, informed Prime Minister Rabin that President Bush would consider any attack on Israel a *casus belli*.<sup>8</sup>

American Secretary of Defense Richard Cheney so feared the political ramifications of a Scud attack against Israel that in October he proposed an American attack that would sweep western Iraq to eliminate the Scud threat. Although the US military leaders considered the scheme contradictory to the planning effort for liberating Kuwait, it was duly investigated by their staffs and pronounced logistically unfeasible.<sup>9</sup> US commanders, briefed that Saddam's missiles were probably limited to conventional warheads, attributed little military significance to the missile threat. Nevertheless, the political dimension of Iraqi Scuds being fired at Israel haunted Cheney and other American policy makers.

## **Terror in Tel Aviv**

The euphoria in Washington over the remarkable coalition success in the initial hours of Desert Storm was extinguished by the gloom which followed Iraq's first Scud attacks. On 18 January, just past 0200 Israeli time, eight Scuds impacted around Tel Aviv and Haifa. Saddam's anticipated effort to provoke Israel into a coalition-breaking reaction had been launched. American political heartburn then increased with initial intelligence reports that nerve gas had been detected in the Scud debris and that 60 Israeli aircraft had been launched.<sup>10</sup> Restraint was urged through frantic White House phone calls

patched through to Israel. The Israeli leaders, who had been coaxed out of any preemptive strikes against Iraq, now promised Washington nothing.

Within hours, the initial reports of nerve gas were corrected and the launch of Israeli aircraft had been reassuringly identified as air defense against the possibility of Iraqi air strikes following the Scud attack. There had been only moderate damage and no serious injuries. Psychological damage was greater, however. This had been the first direct military assault against Israel since its war of independence in 1948. Israeli hospitals were filled with people seeking treatment for panic, anxiety, and the (needless) injection of atropine, the antidote to nerve gas. Anxious families huddled in sealed rooms, lining doors with wet towels and donning gas masks. More than a thousand people jammed the underground Tel Aviv bus station, and phone calls from the United States to Israel increased from the usual three thousand an hour to 750,000.<sup>11</sup>

The Israeli leadership was faced with a dilemma. For forty years, Israel had meted out swift retaliation for any and all attacks. Any failure to strike back now might mar those many decades of deterrence, embolden Israel's adversaries, and scar the country's morale. Yet, to retaliate would undoubtedly cripple and perhaps break Israel's tenuous relationship with the United States. Israel relied on its annual stipend of \$3 billion from the United States and did not want to trigger any breakdown in the coalition or ignite a Middle East war that might end the "special relationship" shared by the two countries.<sup>12</sup>

From the first attack on 18 January until the last on 25 February, Iraq fired a total of 39 missiles against Israel on 17 separate days. In all, these attacks were directly accountable for only two fatalities. Even though chemical use was a possibility throughout the campaign, each successive conventional attack lessened the associated anxiety. Nevertheless, the American reaction was immediate, lengthy, and disproportionate to the relatively minor damage incurred by Israel.

## **American Leadership Reacts**

Washington followed its initial pleas for restraint by sending Patriot missiles to Israel, the first arriving within 17 hours.<sup>13</sup> Avoiding Israel's request for safe passage codes to facilitate any Israeli offensive actions through allied airspace, Washington then began the political redirection of its own air campaign. Destruction of all the fixed Scud launching sites, suppression of all mobile launchers, and a continuous air presence over western Iraq became the new top priority of the air campaign. Gen Norman Schwarzkopf later recounted, "we could feel the pressure Israel was putting on Washington, because Washington was turning around and putting it on us."<sup>14</sup>

Although the diversion of a large portion of air assets threatened to derail the allied air campaign, Schwarzkopf was forced to comply. He diverted "fully

one-third of the more than two thousand combat and support missions scheduled each day for the strategic air campaign to the Scud hunt."<sup>15</sup> US military control of the air campaign was further degraded by a Washington decision to permit the Israelis to provide target lists through their personal USAF liaison. To this, Gen Charles Horner, Schwarzkopf's air commander, replied, "Sir, this is insane. We can't have a bunch of Israelis who have no idea of our overall campaign plan telling us where to put bombs. We're throwing bombs into the dunes. We're starting to endanger pilots' lives."<sup>16</sup> Yet, the diversion of allied air and ground assets continued for the remainder of the war.

The Scud hunt was not limited to air assets. Secretary Cheney, again over the objections of his military commanders, sent US special operations forces (SOF) into the theater to participate in the search for and destruction of mobile Scuds aimed at Israel.<sup>17</sup> Although British special air service (SAS) forces had been on the ground in western Iraq since the beginning of the war and were already involved in the Scud hunt, Washington's emphasis eventually resulted in the participation of over eight hundred Delta Force troops and Rangers, two hundred of which were in Iraq at any given time.<sup>18</sup>

The relatively minor destruction and relatively major anxiety caused by Hussein's Scud attacks against Israel must be weighed against that suffered by the coalition. In the same time that Israel was attacked by 39 missiles, 43 missiles fell on Saudi Arabia and three on Bahrain.<sup>19</sup> Israel's two fatalities stand in stark contrast to the 40 deaths suffered by the coalition, 28 in one attack against Dhahran. The military frustration toward Washington's emphasis on Israel's plight was expressed by General Schwarzkopf to Gen Colin Powell: "You know you guys have completely lost your perspective. I appreciate your concern about Israel, but what about concern for us in Riyadh and Dhahran? We're getting Scuds, too."<sup>20</sup>

Three days after the first Scuds hit Tel Aviv, the following article appeared in *The Jerusalem Post*:

### **US To Be Asked for Billions for Losses From War**

Israel will be asking the U.S. for losses brought on by the Gulf War, government officials said yesterday. Sources in the Finance Ministry said that Israel would ask for an aid package consisting of a combination of grants, loans, and debt forgiveness, but refused to put a price tag on it.

"We're accumulating points now," said one official, referring to Israel's decision not to respond—at least for now—to the Iraqi missile attacks. "We will bring the matter up later together with our request for loans for immigrant absorption."<sup>21</sup>

Three days after the article appeared, Israel's finance minister, Yitzhaq Moda'i, did indeed put a price tag on Israel's forbearance. "In the talks with the Deputy Secretary of State and at his request, we provided him with a few figures." The first figure was \$3 billion.<sup>22</sup> Also, peace negotiations after Desert Storm resulted in \$10 billion of US loan guarantees to help Israel relocate Soviet immigrants.

Over the objections of coalition military commanders and to the detriment of the ongoing strategic air campaign, allied air and ground forces hunted Scuds aimed at Israel for the remainder of the war. Although more Scuds struck the coalition states and caused greater loss of life, political emphasis remained with Israel—whose forbearance and restraint earned financial dividends. Simple nuisance raids of negligible military value exacted a remarkable political toll.

### Notes

1. Anthony H. Cordesman and Abraham R. Wagner, *The Lessons of Modern War, Volume II: The Iran-Iraq War* (London: Mansell Publishing Ltd., 1990), 367. These estimates are based on discussions with Iranians present in the city at the time, Australian intelligence officers, and a Mr. Robin Wright.
2. Cordesman, 185. The six battles were near Hur ul-Hoveyzeh on 25 February, the Shatt e-ali area on 26 February, the Taleyah area on 2 March, the Majnoon Islands on 9 March, and in the Joeyr-Al Ba'iza and Kawther regions on 17 March. It is important to note that Iranian tactics contributed to the casualty counts because they involved slow moving infantry formations.
3. A Circular Error Probable (CEP) of one kilometer means that the missile has a 50 percent chance of landing within one kilometer of the target.
4. Nolan Janne and Albert D. Wheelon, "Third World Ballistic Missiles," *Scientific American*, August 1990, 39.
5. W. Seth Carus, "Chemical Weapons in the Middle East," *Policy Focus*, no. 9, Washington Institute for Near East Policy, December 1988, 7.
6. Cordesman, 503. "Some sixty pounds of mustard gas were required in WWI per casualty, only two percent of the casualties died."
7. For a much deeper examination of the realistic capabilities of the Scud and other modern missiles refer to Steve Fetter, "Better Missiles, and Weapons of Mass Destruction," *International Security*, vol. 16, no. 1 (Summer 1991): 5-42.
8. William F. Andrews, *The Desert Storm Campaign: A Study of Military and Civilian Control in War* (New York: Houghton Mifflin Co., 1993), 96.
9. Rich Atkinson, *Crusade, The Untold Story of the Persian Gulf War* (New York: Houghton Mifflin Co., 1993), 96.
10. *Ibid.*, 83.
11. *Ibid.*, 91.
12. *Ibid.*, 92.
13. Richard P. Hallion, *Storm Over Iraq: Air Power and the Gulf War* (Washington: Smithsonian Institution Press, 1992), 180.
14. Norman H. Schwarzkopf with Peter Petre, *It Doesn't Take a Hero* (New York: Bantam Books, 1992), 418.
15. *Ibid.*
16. *Ibid.*
17. Atkinson, 278.
18. *Ibid.*, 178.
19. Barry D. Watts and Thomas A. Keany, *Gulf War Air Power Survey, Volume II, Part II: Effects and Effectiveness* (Washington, D.C.: Government Printing Office, 1993), 337.
20. Atkinson, 119.
21. Alisa Odenheimer, "U.S. to be Asked for Billions for Losses From War," *The Jerusalem Post*, 21 January 1991, 10.
22. "Moda'i Denies Submitting Aid Request to U.S.," *Jerusalem Voice of Israel and IDF Radio Network in Hebrew*, 2200 GMT, 24 January 1991.

## Chapter 6

### Analysis

*It is right, however, to record the fact that the undoubted terror inspired by the death-dealing skies angered the population of the stricken towns and led to a fierce demand for reprisals.*

—David Lloyd George

Examination of these three campaigns yields an obvious overall conclusion: When people are threatened by something new and sinister, there is a strong impulsive reaction to it. Adolescent flying machines, employed by the Germans against “Fortress London” in the First World War, frightened England into increased war production, redeployment of forces away from the front, and creation of the RAF. In the Second World War, Hitler’s vengeful employment of sinister, unmanned weapons against a populace that had weathered an extended campaign of terror from manned bombers produced another reallocation of forces and a significant redirection of military operations. In the Gulf War, terror attacks against Israel, although militarily insignificant, stimulated yet another reallocation of forces, redirection of operations, and compensatory “hush money.”

In none of these three terror campaigns was the resulting damage critical to the military effort. Nor did the campaigns cause significant, or even insignificant, physical destruction when compared to other losses at the time. The attacks were not capable of breaking, nor were they intended to break, the victim’s war machine or war-making potential. They were, instead, designed for maximum psychological impact—and they would produce a visceral, disproportionate response.

The responses stimulated by these three nuisance campaigns should be considered in light of the generally accepted conclusion about the effects on the targeted populations of the Blitz and the CBO. The persistent and protracted aerial bombing of the English and German populaces during the Second World War did not, by themselves, produce decisive results. In fact, it may even have galvanized and desensitized the citizens against both the attacks and the attackers.

Recall the first question: If such exhaustive terror campaigns have debatable value, can annoying, limited raids really be coercive? Evidence from the three campaigns examined above suggests that government leaders were pushed into reflexive overreactions; therefore, nuisance raids *have* produced significantly disproportionate responses from leaders of the targeted populations. The second question—“Why?”—is the subject of this chapter.

## **Nuisance versus Conventional**

Annoyance raids are characteristically distinct from conventional strategic bombing. Although the strategic bombing campaigns waged by Britain and the United States during the Second World War were designed, at least in part, to coerce enemy leaders by targeting the people, they were different in nature, timing, and scale from the terror campaigns of World Wars I and II and the Gulf War.

The strategic campaigns justified their expense in men and machines by attacking targets of supportable military value. The American strategic forces confined their raids to daylight "precision" attacks not only to improve accuracy against such targets but also to reduce distasteful civilian casualties. RAF night attacks against German cities were staunchly justified (with tongue in cheek) as "dehousing the workers." Whatever the reality, however, strategic campaigns have usually avoided the overt targeting of civilians for terror purposes. Terror campaigns, on the other hand, do not avoid population centers; they openly target civilians for effect.

The manned bomber offensives of the Second World War were lengthy campaigns, coercing the enemy leadership through months of bombing that produced, along with destruction of military targets, civilian aggravation and discord. During America's involvement in Vietnam, a protracted strategic campaign (Operation Rolling Thunder) used the threat of gradually increasing damage as its coercive mechanism.<sup>1</sup> In contrast, nuisance raids count on the shock effect of sudden terror as the means of causing policy change. There is value in trying to achieve results before the populace becomes accustomed, and then resilient, to repeated attacks.

The most obvious historical difference between conventional bombing campaigns and nuisance attacks is one of scale. The CBO, for instance, lasted for years and involved tens of thousands of aircraft and hundreds of thousands of men. Its victims also numbered in the hundreds of thousands. London suffered only 9,902 deaths in the V-1 and V-2 attacks while Israel counted only two direct fatalities from the Scuds. Compared to conventional civilian bombing, nuisance raids field a small fraction of the weapons and kill an equally small fraction of the people.

## **The Effects of Shock**

With few weapons killing few people for a short period of time, nuisance terror raids rely on their unique psychological effects to have an impact. Although the targeted populations of the blitz and the CBO suffered shock and trauma during the initial stages of the campaigns, they became less sensitive as the bombings continued. According to Irving Janis, "when a population is exposed to a series of heavy and relatively dangerous raids, fear responses again subside and precautionary measures tend to be gradually

disregarded."<sup>2</sup> Nuisance raids, on the other hand, exploit the immediate shock of a terror attack before the populace becomes accustomed to the pattern of violence.

Evidence from the British experience during the Second World War suggests that the resilience developed by the populace toward the longer and more destructive Luftwaffe bomber raids did not protect them from the initial shock of the V weapons. During the early V-1 attacks, in London's Paddington district, the number of occupants in air raid shelters was over 20,000, which was five thousand more than in December 1940 after four months of the Blitz.<sup>3</sup>

The novel capabilities of the strange, unmanned, "V" weapons contributed to their psychological effect. The V-1s created a certain type of frustration due to the fact that whenever one was intercepted and brought down, there was no "vindictive satisfaction" from the downing of an enemy crew. One frustrated Briton explained, "Back in the days of the Blitz, a fallen Heinkel was full of the bastards who were trying to kill you!"<sup>4</sup>

Since these new V weapons required no manned input for final guidance and risked no crews by daylight attack, they rained down on London at all hours and in any weather. The populace, which had come to expect periods of safety due to unsafe conditions for bomber crews, now suffered from the novelty of around-the-clock bombing. Alerts sounded throughout the day and night, leading to increased physical and psychological stress caused by sleep deprivation and altered routines.

This kind of stress can lead to extraordinary and exaggerated results. In a study recently published in the *Journal of the American Medical Association*, three Israeli doctors noted that on the day of the first Iraqi Scud attack against Israel, the national death rate soared to 58 percent above normal even though no one was directly killed by the missiles.<sup>5</sup> Due to fears of chemical warheads, Israelis donned gas masks and hid in "sealed" rooms when the first alarms sounded. The doctors attributed some of the increased deaths to respiratory problems from the masks but noted that many others apparently died from psychological stress, "most conspicuously on the first day, when no one knew what kind of payload the missiles would carry." The report also noted that when the fear of chemical attack proved unfounded, "as the weeks wore on, many Israelis got so used to the situation that they did not even bother putting on masks." This notable example illustrates both the initial impact of psychological terror and the gradual waning of its effects.

The security upon which the British population had historically come to rely may also help explain the exaggerated effects of the terror attacks, especially in the First World War. England had not been successfully invaded since 1066. The civilian population had for centuries been insulated by the English Channel from the periodic destruction that seethed back and forth across the continent. Whenever England was involved, only its naval and military expeditionary forces were put at risk. Suddenly, enemy weapons were maiming and killing men, women and children in their own homes on

their insulated island. There were no enemy forces physically on their territory, yet they were at risk.

The geographical difference may also help explain why the British reacted differently from other Europeans to aerial terror attacks. Paris was also heavily bombed by German forces during the First World War, but there is no indication that France's leadership was willing to create or divert any substantial military force to stop it. Paris was, after all, only 70 miles from the front and had on many occasions in history suffered the physical hardships of war in her streets (most recently, the German siege of 1870–71 which lasted several months). Also, the bombing of Spanish cities during the civil war in the 1930s resulted in little overreaction by either populace or leadership. Ground war already raged all around them.<sup>6</sup>

## Leadership

In the three campaigns studied here, leadership suffered from enormous stress. Harried by their own human frailties as well as the pressures of their offices, Lloyd George, Churchill, and Bush reacted similarly for predictable reasons. As human beings, they were apt to respond viscerally to the horror of attack against "off limits" civilians and to respond defensively to accusations from the media; as representatives of the people, they were responsible for protecting the country; as representatives of their political systems, they were convenient lightning rods for the victims of terrorism.

Since leaders suffer the same physical and psychological pressures as their constituents, they can be expected to respond just as viscerally to the wanton death and destruction inflicted by terror attacks. Lloyd George, fearing the German raids, took shelter in the suburbs. Churchill's tearful public reactions to bombed-out London neighborhoods endeared him to his people. Bush's personal animosity toward Hussein helped shape coalition policy. All three leaders were just as human as the suffering populations they represented.

The media, with watchful stare and accusation, also contributed to the exaggerated responses of these men. Although British wartime security policies enabled Lloyd George and Churchill to prevent the reporting of certain stories, popular outcry from concerned citizens and politicians nevertheless made daily news. Calls for reprisals were common.

Sir—I was in the Folkestone air raids and returned to London yesterday whilst the Taubes were bombing the East-End. On both occasions—but especially in Folkestone—I saw sights which made my heart bleed and my blood boil. Unfortunately, this unspeakable war has accustomed us, in a certain measure, to horrors of different sorts, and it has also taught us to endeavor to put restraint both on our words and actions. When, however, our womenfolk and children are being systematically slain and maimed it seems to me that it is time to raise our voices in protest against inaction. We are by tradition clean fighters and sportsmen, and if it was simply a question of protecting the male adult population I should still hesitate to advocate reprisals. But our women and children are a sacred trust and as, after nearly three years experience, we have conclusively proved that our enemies can

only be deterred from cowardly crimes of this description by fear of being treated in the same manner, I consider the moment is now ripe for a salutary lesson.<sup>7</sup>

Letters like this, and the popular feeling they represented, would have been difficult for leadership to ignore. Even more powerful, however, was the real-time international media coverage of the Gulf War. Censoring the reports of Scud attacks on Israel was virtually impossible—and live video images beamed to a worldwide audience create a personal, dramatic impact. Although written accounts of terror attacks have been and continue to be descriptive and persuasive, they cannot match the emotional impact of live television. There is little room for a leader to maneuver (and err) when the populace has as much knowledge of events as the leader has.

As the leaders of Western democratic systems, Lloyd George, Churchill, and Bush also served as the representatives of their people. Since their offices were gained by popular approval and would be maintained in the future by popular approval, there was pressure to respond to the terror attacks. But they also stood to be blamed for any suffering the populace endured. After the first month of V-1 attacks, for example, when Londoners were fleeing the city at the rate of 15,000 per day, popular frustration turned toward the government. Locals publicly damned the prime minister, and the 15 July 1944 issue of *Picture Post* featured a three-page photo essay that began with this sentence: "Somebody in the British Government was caught napping by the Flying Bomb."<sup>8</sup>

Acting in the name of their people, democratic leaders are perfect targets for terror campaigns. Not only must they grapple with their own personal fears and tendencies toward gut-level reactions, but they must also answer to the media and the people they are sworn to protect. Since short-lived raids take advantage of their novelty to generate terror, and do not last long enough for the victims to become desensitized to their effects, they are capable of coercing representative leadership into disproportionate responses.

### Notes

1. This campaign attempted to coerce the North Vietnamese by targeting objects of progressively greater value. It was an air campaign comprised of increasing punishment. See Mark Clodfelter, *The Limits of Airpower* (New York: Free Press, 1989).

2. Irving L. Janis, *Air War and Emotional Stress: Psychological Studies of Bombing and Civilian Defense* (New York: McGraw Hill, 1951), 124.

3. David Johnson, *V-1, V-2: Hitler's Vengeance on London* (New York: Stein & Day, 1981), 55.

4. *Ibid.*, 66.

5. Clyde Haberman, "Israel Study Sees Higher Death Rate From '91 Scud Attacks," *New York Times*, 21 April 1995.

6. See Chief of the Wehrmacht's High Command, General Keitel's Message to the Foreign Minister of 22 March 1938, Document Number 549 *Akten sur Deutschen Auswartigen Politik 1918-45*, Series D, Band III, 529-30.

7. "Reprisals. To the Editor of the Times," *The Times*, 15 June 1917, 7.

8. Johnson, 88.

## Chapter 7

### Conclusion

*The advent of air power, which can go straight to the vital centers and either neutralize or destroy them, has put a completely new complexion on the old system of making war. It is now realized that the hostile main army in the field is a false objective, and the real objectives are the vital centers.*

—Brig Gen William “Billy” Mitchell

*It will require the full exercise of the full powers of the Federal Government to restrain the fury of the noncombatants.*

—Gen Winfield Scott  
(After the Confederate attack  
on Fort Sumter, 1861)

Hussein’s Scud attacks on Israel provoked international consternation and, although they were militarily insignificant, appeared capable of toppling the allied coalition. Throughout the twentieth century, aerial bombardment alone had not proven itself decisive; yet, Hussein’s missile campaign stood on that very threshold. The remarkably unbalanced relationship between Iraq’s mediocre missiles and the coalition’s intense reactions to them inspired this investigation.

Aerial terror bombing is a modern form of terrorism, and it is the aim of terrorism to create intense fear that will have an impact on national leaders. Regardless of subtle differences between terror bombing and other forms of terrorism, the basis of both lies in their use of violence. By attacking the traditionally secure and protected elements of society, terrorism violates the accepted laws of conflict and provokes visceral responses. Aerial weapons, being capable of bypassing the normal layers of defense that have historically insulated such vulnerable targets, seem ideal for the terrorist’s purposes.

The mystique surrounding airpower, a relative newcomer to the world of armed conflict, still inspires an exaggerated aura about its destructive impact. It has been heralded by reporters and novelists alike to a gullible and impressed audience. Relying on machinery to wreak its destruction, airpower appeared less human and more detached than traditional land and naval power. This impersonal image was further enhanced by the great heights from which bombs could be dropped and the great distances from which missiles could be launched.

Airpower first proved itself as a viable means of coercion when a small segment of the Kaiser’s air forces carried an aerial terror campaign to

Britain's capital during the First World War. While hundreds of thousands of British troops were being slaughtered in the trenches with little coercive impact, German Zeppelins, Gothas, and Giants, inflicting just over two thousand total civilian casualties, stirred the British government into reaction. While publicly acknowledging the importance of the war at the front, Lloyd George diverted airpower back to the defense of London over the objections of Generals Haig and Trenchard. Lloyd George then doubled aircraft production and, on the advice of the Smuts report, created the world's first independent air force—the RAF. While the colossal loss of life on the front could not alter the British government's course, the suffering of some of the capital's citizens could.

Londoners would suffer under German bombs again during the Second World War, but in two distinct campaigns. When the Luftwaffe could not defeat the RAF for supremacy of the air over southeast England in the summer of 1940, German bombers were turned against London to bomb the British into submission. The blitz, which lasted into 1941, did not coerce the British government. In fact, it inflamed the will of the populace, who became desensitized to the nightly punishment.

Four years later, however, Hitler changed his tack and launched a new kind of weapon against the resilient Londoners. The unmanned "Vengeance" weapons, V-1 and V-2, impacted around the clock. Although the destruction and casualties resulting from the "V" weapons were a mere fraction of those produced by the blitz, they had a greater impact on the citizenry and, therefore, on the leadership. Not only was a large portion of the Allied airpower diverted away from the combined bomber offensive in response to the raids, but evidence also suggests that Operation Market Garden was approved by Eisenhower in response to the V-2 attacks; both the airpower diversion and Market Garden represented major departures from prior planning.

Desert Storm proved that the coercive use of aerial terror weapons had truly come of age. Even before Hussein's first Scud attack, coalition diplomats scurried to offset the anticipated response by Israel. When the attacks did come (despite the lack of chemical warheads and the fact that Israel suffered only two deaths directly from Scud impacts), President Bush and the allied leadership redirected the air campaign and employed ground forces—against their military commanders' wishes—and eventually provided Israel with hefty financial incentives to remain neutral.

Such nuisance attacks are different from conventional civilian bombing in nature, timing, and scale. The great air campaigns promised war-winning results. They attacked the enemy's physical war-making potential to achieve material results while expecting the indirect civilian suffering to help coerce a weary leadership. Nuisance raids, on the other hand, are incapable of physically defeating an enemy's war-making capability. They rely instead on directly and openly targeting civilians for the greatest psychological effect. They are short-duration campaigns, counting on initial shock and the resulting visceral reactions to spur desired changes in policy, strategy, and

tactics. If properly planned and executed, nuisance campaigns should achieve results before their temporary effects wear off. The number of casualties and the amount of destruction they cause are only a fraction of the devastation inflicted by major conventional bombing campaigns.

Smaller, shorter, and aimed specifically at civilians, nuisance campaigns attack the mindset of the enemy's leadership. Democratic leaders are sensitive to this kind of attack because they react not only as individuals but also, and more important, as representatives of their electorate. Further, they must suffer the pressures of an ever-present and more capable media.

### **Limitations**

Since this paper concentrated on only three nuisance campaigns, there are limits on the conclusions and implications that can be drawn from it. Although the study of London's citizenry comprised the bulk of this investigation, their circumstances were, in fact, unique. They may have been ill-prepared for the psychological stress of attacks on their capital because of the centuries of insulation preceding the first Zeppelin raids. They may also have been lulled into certain expectations during the blitz of 1940 that resulted in some amplification of the "V" weapons' psychological effects. The popular reactions of other nations that have experienced terror bombing may have differed from those studied. Their experiences are fertile ground for more exhaustive research on this subject. However, the fact that other nations have experienced nuisance attacks should not detract from the specific conclusions reached here about British and American responses.

In an effort to investigate something of value for American leadership, this study concentrated on the reactions of Western democratic leaders. It centered on British, American, and Israeli governmental actions because their leaders' reactions are related to their representative and electoral natures. However, nuisance raids may also be effective against despotic and autocratic rulers. Such leaders may be coerced by attacks which threaten the popular perception of their grip on power. During the Battle of Britain, a RAF raid on Berlin may have been instrumental in coercing Hitler into turning his own bombers from their effective attacks against the RAF infrastructure and toward reprisal raids on London. A further understanding of these reactions might prove useful during future conflicts.

### **Implications and Recommendations**

One requires only a glance at some of today's major news stories to understand the importance of nuisance terror. Partly in response to misinterpreted political experience from Desert Storm and the spread of weapons of mass destruction (WMD), the United States has embarked on a

program to develop theater ballistic missile defenses (BMD).<sup>1</sup> This program is reminiscent of the interwar reactions to civilian terror bombing and inflated expectations of its destructive effects.

Between World Wars I and II, general ignorance of the real capabilities of aerial weaponry led to exaggerated expectations for manned bomber raids. Hollywood hype and a pacifist agenda created the popular perception that civilian terror bombing would result in total devastation. Is there not a similar misperception growing today around missile and WMD technology? More Israelis suffocated while wearing their unnecessary gas masks than died from the Scuds, which caused only minimal physical destruction. Hussein's weapons were militarily ineffective. Even if they had contained chemical warheads, Iraq did not possess the capability to launch enough at one time to achieve any substantial degree of lethality. How much overestimation is involved in America's new headlong pursuit toward a BMD?

If it can reasonably be assumed that America faces no immediate external threats to its physical existence or war-making capabilities, then any threat to our ballistic missile defense system might reasonably be considered a nuisance threat intended to terrorize. In addition to any defenses required to meet such a threat, we should also educate our leaders and our people about the real effects of terror attacks.

The realistic requirements for chemical weapons capabilities should be considered before future assumptions about drastic casualty numbers are made. The April 1995 nerve gas incident in Tokyo pointed to some of the difficulties involved with the use of WMD and also some of the unrealistic apprehension about it. Even though thousands of people were exposed within a closed subway system and were breathing tainted air, relatively few fatalities resulted.<sup>2</sup>

Since terror raids depend on psychological stress, created by the shock of sudden violence, to achieve coercive results, measures designed to alleviate the shock might also decrease the stress—and therefore the pressure placed on leaders. Preparing the potential victims by informing them of the realistic capabilities of the weapons they face would help reduce the fear of the unknown. Wide media coverage of such events could be instrumental in such an education.

Intense media coverage of terror attacks may also prove helpful in desensitizing the American public to any such attacks. The psychological resilience fostered by the survival of terror attacks, which Irving Janis referred to as the "remote-miss" experience, may be enhanced by increased awareness of such events. According to Janis, the more often someone is aware of attacks taking place that do not affect them personally, the less threatened they feel. Wide media interest might, therefore, prove as helpful in relieving the pressure on American leaders to respond as it is harmful in forcing visceral reactions.

This paper has attempted to illustrate a pattern of reaction to aerial nuisance campaigns. Over the opposition of their military advisors, British and American leaders responded emotionally to the political pressure of

suffering innocents even though their military forces were already enduring much greater death and destruction on the battlefield. Since weapons that are capable of threatening the vulnerable core of our society are spreading globally, and the likelihood of their use is also increasing, American leaders should anticipate the pressures they will be under if such an attack occurs. They should temper any emotional responses with the knowledge that nuisance attacks depend on our tendency to overestimate their destructive effects while underestimating the resilience of the people.

#### Notes

1. On 25 January 1993, *Aviation Week & Space Technology* stated, "Theater Missile Defense schemes being explored by the US Strategic Defense Initiative will require at least \$12.6 billion in Fiscal 1992-97, according to the General Accounting Office. That is \$2.4 billion more than the SDI Organization's latest projections."

2. A 3 April 1995 *Newsweek* article on the attack listed the death toll at 10, with five thousand treated for injuries.

## ***Bibliography***

### **Terrorism**

- Eichelman, Burr, ed. *Terrorism, Interdisciplinary Perspectives*. Washington: American Psychiatric Association, 1983.
- Fetter, Steve. "Ballistic Missiles and Weapons of Mass Destruction," *International Security*, vol. 16, no. 1, Summer 1991, 5-42.
- Freedman, L. A., and Y. Alexander, eds. *Perspectives on Terrorism*. Wilmington, Del.: Scholarly Resources, 1983.
- Friedlander, Robert A. *Terrorism—Violence: Aspects of Social Control*. New York: Oceana Publications, Inc., 1983.
- Hubbard, David G. *Winning Back the Sky: A Tactical Analysis of Terrorism*. San Francisco: Saybrook Publishers, 1986.
- Janis, Irving L. *Air War and Emotional Stress: Psychological Studies of Bombing and Civilian Defense*. New York: McGraw Hill, 1951.
- MacCurdy, J. T. *The Structure of Morale*. Cambridge [Eng.] The University Press: MacMillan, 1943.
- Schelling, Thomas C. *Arms and Influence*. New Haven: Yale University Press, 1966.
- Strasser, Steven, and Tom Post, "A Cloud of Terror—and Suspicion," *Newsweek*. 3 April 1995, 36-41.
- "Target for Clinton," *Aviation Week & Space Technology*, 25 January 1993.
- Wardlaw, Grant. *Political Terrorism: Theory, Tactics and Counter-Measures*. Cambridge: Cambridge University Press, 1989.
- Wagh, William L. *International Terrorism: How Nations Respond to Terrorists*. Salisbury, N.C.: Documentary Publications, 1982.
- Wells, H. G. *War in the Air*. London: Collins Clear-Type Press, 1921.
- Wilkins, Burleigh T. *Terrorism and Collective Responsibility*. New York: Routledge, Chapman and Hall, Inc., 1992.

### **World War I**

- "Air Attack on London." *The Times*, 15 June 1917.
- "Air Raid Warnings." *The Times*, 14 June 1917.
- "Berlin To-Day." *The Times*, 14 June 1917.
- Castle, H. G. *Fire Over England: The German Air Raids of World War I*. London: Secker & Warburg, 1982.
- Clodfelter, Michael. *Warfare and Armed Conflicts, A Statistical Reference to Casualty and Other Figures, 1618-1991*, vol II. Jefferson, N.C.: McFarland & Co., Inc., 1992.
- Cooper, Malcolm. *The Birth of Independent Air Power*. London: Allen & Unwin, 1986.
- Cross, Robin. *The Bombers*. New York: MacMillan Publishing Co., 1987.

- Dudley, Ernest. *Masters of the Purple Twilight: the Story of the Life and Death of the Zeppelins*. London: Harrap, 1960.
- Fredette, Raymond H. *The Sky On Fire. The First Battle of Britain 1917-1918 and the Birth of the Royal Air Force*. New York: Holt, Rinehart & Winston, 1966.
- Hearne, R. P. *Aerial Warfare*. London: John Lane, 1909.
- . *Zeppelins and Super Zeppelins*. London: John Lane, 1916.
- Jones, H. A. *The War in the Air*. Oxford: The Clarendon Press, 1937.
- Lloyd George, David. *War Memoirs of David Lloyd George, 1917*. Boston: Little, Brown, & Co., 1934.
- Mason, Francis K. *Battle Over Britain, A History of the German Air Assaults on Great Britain, 1917-18 and July-December 1940, and the Development of Britain's Air Defenses Between the World Wars*. London: Aston, 1990.
- Mitchell, William "Billy." *Skyways: A Book on Modern Aeronautics*. Philadelphia: J. B. Lippencott, 1930.
- Poolman, Kenneth. *Zeppelins Against London*. New York: John Day Co., 1961.
- Quester, George H. *Deterrence Before Hiroshima*. New York: Wiley, 1966.
- "Reprisals." *The Times*, 15 June 1917.
- Rimell, Raymond. *Air War Over Great Britain, 1914-1918*. New York: Sterling Publishing Co., 1987.
- Ross, Albert Henry. *War On Great Cities: A Study of the Facts, by Frank Morison (pseudonym)*. London: Faber and Faber, Ltd., 1937.
- Stevensen, Frances. *Lloyd George: A Diary by Frances Stevensen*. New York: Harper & Row, 1971.
- Whitehouse, Archibald. *The Zeppelin Fighters*. Garden City, N.Y.: Doubleday, 1966.
- Woodward, David R. *Lloyd George and the Generals*. Newark, Del.: University of Delaware Press, 1983.
- Young, Peter, ed. *The Marshall Cavendish Illustrated Encyclopedia of World War I*. London: Marshall Cavendish, 1984.

## World War II

- Bates, H. E. *Flying Bombs Over England*. Westerham: Froglets, 1994.
- Collier, Basil. *Battle of the V-Weapons, 1944-45*. New York: Morrow & Co., 1965.
- Cooksley, Peter G. *Flying Bomb: the Story of Hitler's V-Weapons in World War II*. New York: Shribner, 1979.
- Garlinski, Josef. *Hitler's Last Weapons: the Underground War Against the V-1 and V-2*. New York: Times Books, 1978.
- Jeffe, Kevin. *The Churchill Coalition and Wartime Politics 1940-1945*. Manchester: Manchester University Press, 1990.
- Johnson, David. *V-1, V-2: Hitler's Vengeance on London*. New York: Stein & Day, 1981.
- Lawlor, Sheila. *Churchill and the Politics of War, 1940-1941*. Cambridge: Cambridge University Press, 1994.
- McGovern, James. *Crossbow and Overcast*. New York: William Morrow & Co., Inc., 1964.

- Middlebrook, Martin, and Chris Everitt, *The Bomber Command War Diaries, An Operational Reference Book 1939-1945*. London: Penguin Books, 1985.
- Ramsey, Winston G. *The Blitz Then and Now*, Vol. II. London: Battle of Britain Publications International, Ltd., 1988.
- Speer, Albert. *Inside the Third Reich*. New York: MacMillan Publishing Co., 1969.

## Desert Storm

- Andrews, William F. "The Desert Storm Campaign: A Study of Military and Civilian Control in War." Master's thesis, Department of History, University of Alabama, 1994.
- Atkinson, Rich. *Crusade, The Untold Story of the Persian Gulf War*. New York: Houghton Mifflin Co., 1993.
- Carus, W. Seth. "Chemical Weapons in the Middle East," *Policy Focus*, no. 9. Washington Institute for Near East Policy, December 1988.
- Christie, Thomas. *Desert Storm Scud Campaign*. Alexandria: Institute for Defense Analysis, 1991.
- Cordesman, Anthony H., and Abraham R. Wagner, *The Lessons of Modern War, Volume II: The Iran-Iraq War*. London: Mansell Publishing Ltd., 1990.
- Elpher, Joseph, ed. *War in the Gulf: Implications for Israel*. Boulder: Westview Press, 1992.
- Graubard, Stephen. *Mr. Bush's War: Adventures in the Politics of Illusion*. New York: Hill and Wang, 1992.
- Guilmartin, John F. *Gulf War Air Power Survey, vol. IV, Part I: Weapons, Tactics and Training*. Washington: US Government Printing Office, 1993.
- Haberman, Clyde. "Israeli Study Sees Higher Death Rate From '91 Scud Attacks," *New York Times*, 21 April 1995.
- Hallion, Richard P. *Storm Over Iraq*. Washington: Smithsonian Institution Press, 1992.
- Hybel, Alex. *Power Over Rationality: the Bush Administration and the Gulf Crisis*. Albany: State University of New York Press, 1993.
- "Moda'i Denies Submitting Aid Request to U.S." *Jerusalem Voice of Israel and IDF Radio Network in Hebrew*, in *FBIS Daily Report: Near East and South Asia*, FBIS-NES-91-014, 24 January 1991.
- Nolan, Janne, and Albert D. Wheelon, "Third World Ballistic Missiles," *Scientific American*, August 1990.
- Navias, Martin. *Saddam's Scud War and Ballistic Missile Proliferation*. London: Brassey's, 1991.
- Odenheimer, Alisa. "U.S. to be Asked for Billions for Losses From War," *The Jerusalem Post*, 21 January 1991.
- Schwarzkopf, Norman with Peter Petre. *It Doesn't Take a Hero*. New York: Bantam Books, 1992.
- Smith, Jean. *George Bush's War*. New York: H. Holt, 1992.
- Watts, Barry D. *Gulf War Air Power Survey, Vol II, Part II: Effects and Effectiveness*. Washington: Government Printing Office, 1993.

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